Trend Study 10R-17-00

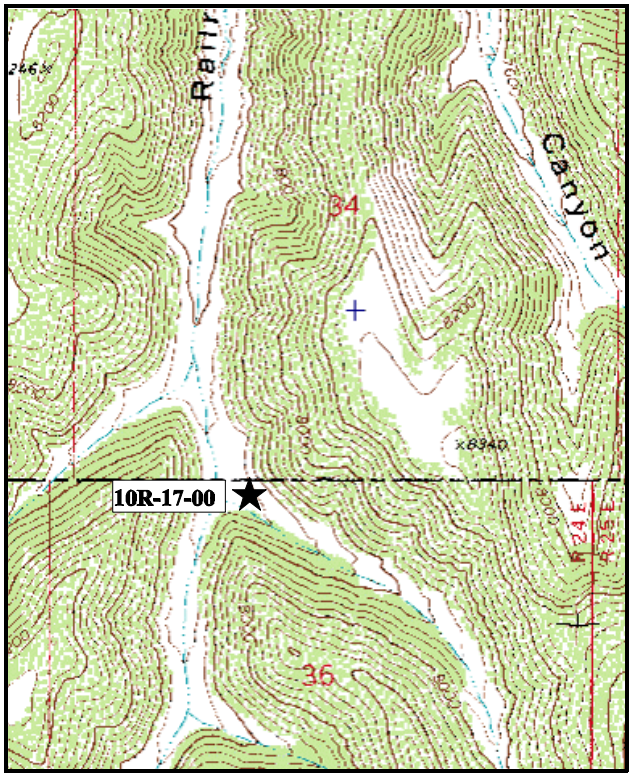
Study site name: Railroad Canyon . Range type: Big Sagebrush-Grass/Burn.

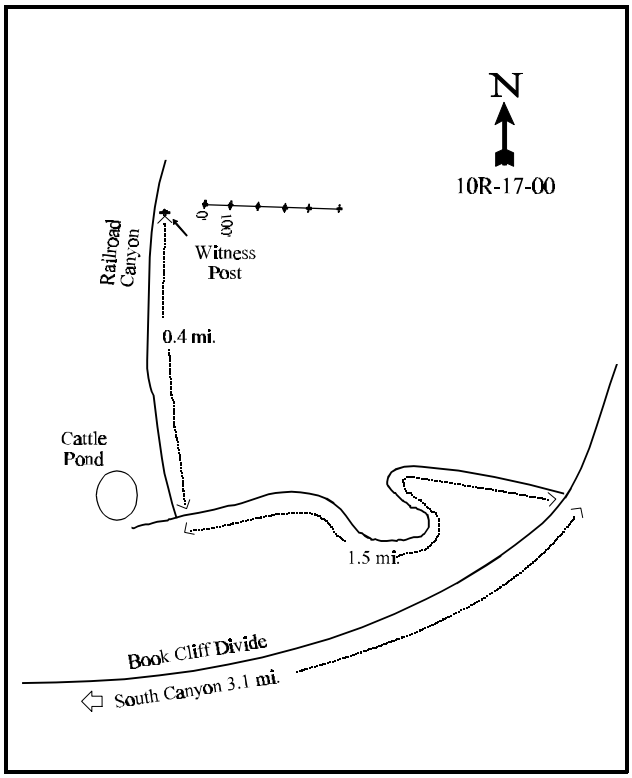
Compass bearing: frequency baseline 104°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1(11ft), line 2(34 ft), line 3(59 ft), line 4(71 ft) line 5 (95 ft).

LOCATION DESCRIPTION

From the intersection of South Canyon Road and Book Cliff Divide Road follow Book Cliff Divide Road east 3.1 miles to where the road to Railroad Canyon breaks off to the left. Take this road and follow in down 1.5 miles almost to the cattle pond where a faint road breaks off to the right into railroad canyon . Take this road 0.4 miles to a witness post on the right side of the road. From the witness post the 0' stake is 85 paces at 64°M in the burn, the stake is marked by browse tag # 103.





Map name: Tom Patterson

Diagrammatic Sketch

Township 15 ½ S , Range 24 E , Section 36 .

UTM 4369319.203 N, 653168.376 E

DISCUSSION

Trend Study No. 10R-17

The Railroad Canyon study was established in 1998 and samples a small narrow side canyon in Railroad Canyon. The site has an elevation of about 7,500 feet with a west aspect and a slight slope (7%). There is aspen growing on the steep slope to the south of the site. The study area was dominated by large basin and mountain big sagebrush in the summer of 1998 when the study site was established. The canyon was then burned by the BLM in the fall of 1998 and the trend study re-read during the summer of 2000. The area is used by elk and livestock. Pellet group data taken in 1998 estimated 27 elk and 14 cow days use/acre (67 edu/ha and 35 cdu/ha). Two elk were seen on the site and other could be heard nearby when the study was established on July 6th, 1998. After the burn, use by elk increased to an estimated 55 elk days use/acre (136 edu/ha). Deer use was estimated at 12 days use/acre (30 ddu/ha).

Soil at the site is deep with an estimated effective rooting depth of nearly 30 inches. There is some pavement on the surface but little rock within the soil profile. Soil texture is a sandy loam with a neutral soil reaction (6.7 pH). Prior to the burn, erosion was minimal due to the abundant vegetation and litter cover. After the burn, percent bare ground increased from 8% to 35% and some erosion was noted. This should discontinue as the herbaceous vegetation becomes reestablished.

The site was dominated by basin and mountain big sagebrush prior to the burn. All of the sagebrush sampled was combined because of the hybridization and called mountain big sagebrush. It had a density of 3,740 plants/acre in 1998 which accounted for 71% of the total browse cover. They were mostly lightly browsed. Vigor was poor on 21% of the sagebrush sampled and 24% were classified as decadent. Other browse included rubber rabbitbrush and snowberry. After the prescribed burn, nearly all of the sagebrush was eliminated. Density is now estimated at only 120 plants/acre. Snowberry is still abundant at 1,365 plants/acre. These show moderate to heavy use.

The key component of this site due to the elevation and season of use is the herbaceous understory. Grasses and forbs were abundant and diverse in 1998 when the site was established. Kentucky bluegrass was the dominant species. It provided 72% of the grass cover and 68% of the total herbaceous cover. Forbs, while diverse, provided little forage. After the burn, the plant composition changed little. Kentucky bluegrass continues to dominate the site. Intermediate wheatgrass and needle-and-thread are also fairly abundant. Several forbs are found on the site but only a few species are found more than occasionally. All forbs combined produce only about 4% cover. This was only the second growing season since the burn with the grasses and forbs not fully recovered yet. Herbaceous cover and frequency will continue to increase for the next few years.

1998 APPARENT TREND ASSESSMENT

Soil at the site appears stable with abundant protective ground cover and little bare ground. The gully in the canyon bottom has healed and no erosion is evident. The most abundant browse is big sagebrush. The population is overly mature with poor reproduction. Mature plants are tall averaging four feet in height. Vigor is poor on 21% of the plants sampled, percent decadence is 24%. The herbaceous understory is diverse and abundant, although it is probably somewhat suppressed by the sagebrush. It is dominated by Kentucky bluegrass which provides 72% of the grass cover and 68% of the total herbaceous cover. Forbs produce little total cover (2%) and only a few species are more than occasionally encountered.

2000 TREND ASSESSMENT

A prescribed burn was conducted on the site during the fall of 1998 to control sagebrush and enhance the herbaceous understory. The soil trend is considered down for the moment with increased bare ground, reduced protective ground cover, and apparent erosion occurring. The browse trend is also considered down due to the elimination of sagebrush. However, the browse is not the critical component on this site due to the elevation and season of use. Trend for the herbaceous understory is considered up slightly since sum of nested frequency for perennial grasses and forbs increased slightly. Kentucky bluegrass still dominates the site. It remained at a similar frequency, while nested frequency of intermediate wheatgrass increased significantly.

TREND ASSESSMENT
soil - down (1)
browse - down (1)
herbaceous understory - up slightly (4)

HERBACEOUS TRENDS --
Herd unit 10R, Study no: 17

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'98	'00	'98	'00	'98	'00
G	Agropyron intermedium	50	*143	21	46	.59	3.69
G	Bouteloua gracilis	24	17	8	6	.66	.08
G	Bromus tectorum (a)	7	1	2	1	.02	.00
G	Carex spp.	3	2	1	2	.15	.06
G	Elymus cinereus	9	8	2	2	1.00	1.61
G	Oryzopsis hymenoides	11	*4	6	3	.52	.33
G	Poa pratensis	410	394	89	88	25.38	18.96
G	Sitanion hystrix	15	6	5	2	.15	.06
G	Stipa comata	102	84	31	28	6.92	4.19
Total for Annual Grasses		7	1	2	1	0.01	0.00
Total for Perennial Grasses		624	658	163	177	35.38	29.00
Total for Grasses		631	659	165	178	35.40	29.00
F	Achillea millefolium	4	10	1	4	.15	.47
F	Agoseris glauca	-	3	-	1	-	.00
F	Androsace septentrionalis (a)	17	*4	9	2	.04	.01
F	Astragalus convallarius	7	6	3	3	.04	.09
F	Aster spp.	-	4	-	1	-	.00
F	Castilleja spp.	2	-	1	-	.03	-
F	Chaenactis douglasii	14	13	8	6	.09	.03
F	Corydalis aurea	-	5	-	1	-	.03
F	Cryptantha spp.	10	3	4	2	.12	.06
F	Descurainia pinnata (a)	-	3	-	1	-	.00

Type	Species	Nested Frequency '98	Nested Frequency '00	Quadrat Frequency '98	Quadrat Frequency '00	Average Cover % '98	Average Cover % '00
F	Oenothera trichocalyx	3	*46	1	15	.15	1.02
F	Penstemon spp.	19	22	7	11	.85	.84
F	Phlox longifolia	3	*77	1	34	.00	.62
F	Senecio multilobatus	38	*18	18	7	.23	.31
F	Sphaeralcea coccinea	2	3	1	1	.15	.03
F	Streptanthus cordatus	2	-	1	-	.03	-
F	Taraxacum officinale	12	13	6	7	.03	.33
F	Tragopogon dubius	10	10	6	3	.03	.01
Total for Annual Forbs		17	7	9	3	0.04	0.01
Total for Perennial Forbs		126	233	58	96	1.91	3.87
Total for Forbs		143	240	67	99	1.96	3.88

* Indicates significant difference at % = 0.10

BROWSE TRENDS --
Herd unit 10R, Study no: 17

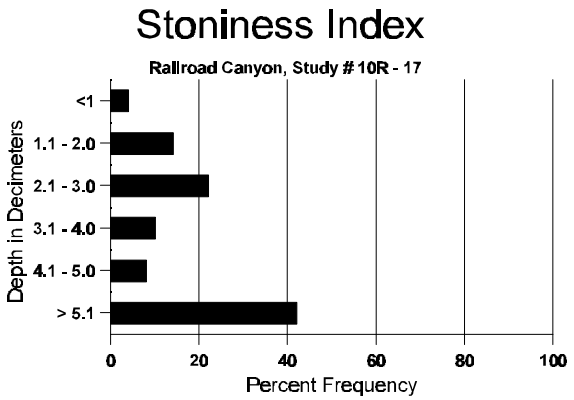
Type	Species	Strip Frequency '98	Strip Frequency '00	Average Cover % '98	Average Cover % '00
B	Artemisia tridentata vaseyana	79	5	21.65	.15
B	Ceratoides lanata	0	2	-	-
B	Chrysothamnus nauseosus	15	2	.93	-
B	Chrysothamnus viscidiflorus	4	2	.06	-
B	Symphoricarpos oreophilus	57	23	7.75	1.47
Total for Browse		155	34	30.40	1.63

BASIC COVER --
Herd unit 10R, Study no: 17

Cover Type	Nested Frequency '98	Nested Frequency '00	Average Cover % '98	Average Cover % '00
Vegetation	465	460	68.31	37.76
Rock	18	137	.09	1.21
Pavement	165	384	2.33	7.20
Litter	490	450	68.18	30.60
Cryptogams	16	1	1.03	.00
Bare Ground	204	429	8.18	35.35

SOIL ANALYSIS DATA --
Herd Unit 10R, Study # 17, Study Name: Railroad Canyon

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
29.6	64.0 (17.7)	6.7	72.7	14.7	12.6	2.4	13.6	92.8	.9



PELLET GROUP FREQUENCY --
Herd unit 10R, Study no: 17

Type	Quadrat Frequency	
	'98	'00
Rabbit	-	1
Elk	3	27
Deer	-	1
Cattle	4	2

Pellet Transect			
Pellet Groups per Acre		Days Use per Acre (ha)	
'98	'00	'98	'00
-	-	-	-
357	713	27 (68)	55 (136)
9	157	1 (2)	12 (30)
165	-	14 (34)	-

BROWSE CHARACTERISTICS --
Herd unit 10R, Study no: 17

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
S	98	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	98	15	-	-	-	-	-	-	-	-	13	-	2	-	300			15
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
M	98	101	16	-	10	-	-	-	-	-	118	-	9	-	2540	40	45	127
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60	5	8	3
D	98	25	12	1	5	2	-	-	-	-	16	-	11	18	900			45
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	98	-	-	-	-	-	-	-	-	-	-	-	-	-	1640			82
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	3540			177

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'98	16%	.53%	21%	-97%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'98	3740	Dec:		24%
'00	120			0%

Ceratoides lanata																		
Y	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	1	-	-	-	-	-	-	-	1	-	-	-	20			1
M	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	-	2	-	-	-	-	-	-	-	2	-	-	-	40	-	-	2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'98	00%	00%	00%	
'00	100%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'98	0	Dec:		-
'00	60			-

Chrysothamnus nauseosus																		
Y	98	3	-	-	1	-	-	-	-	-	4	-	-	-	80			4
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	98	24	-	-	-	-	-	-	-	-	24	-	-	-	480	33	35	24
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	40	21	24	2
D	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	98	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'98	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'98	580	Dec:		3%
'00	40			0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus																		
Y	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	2	-	-	-	-	-	-	-	3	-	-	-	60			3
M	98	2	-	-	2	-	-	-	-	-	4	-	-	-	80	20	16	4
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	5	5	0
X	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'98	00%	00%	00%	-25%
'00	67%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	
'98	80			-
'00	60			-

Symphoricarpos oreophilus																		
S	98	-	-	-	2	-	-	-	-	-	2	-	-	-	40			2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	98	29	-	-	11	-	-	-	-	-	38	-	2	-	800			40
	00	14	17	6	-	-	-	-	-	-	37	-	-	-	740			37
M	98	35	15	10	20	-	-	-	-	-	77	1	2	-	1600	27	37	80
	00	1	17	11	-	-	2	-	-	-	31	-	-	-	620	7	16	31
D	98	3	3	3	-	-	-	-	-	-	4	-	4	1	180			9
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	98	-	-	-	-	-	-	-	-	-	-	-	-	-	100			5
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'98	14%	10%	07%	-47%
'00	50%	28%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	
'98	2580			7%
'00	1360			0%